Appendices

Part VI

Introduction

Appendices A, B, and C describe the modeling techniques used to generate the estimates of future investment requirements highlighted in Chapters 7 through 10, focusing on changes in methodology since the previous C&P report. All three models incorporate benefit-cost analysis in their selection of transportation capital improvements.

Appendix A describes changes in the **Highway Economic Requirements System (HERS)**, which is used to generate estimates of investment requirements for highway preservation and highway and bridge capacity expansion. Significant changes to HERS include the updated pavement deterioration equations; a new improvement costs input matrix; revised capacity calculations; the consideration of work zone delay; changes to the evaluation of widening options; and capturing the effects of current and future operations strategies and ITS deployments.

The **National Bridge Investment Analysis System (NBIAS)** is the primary tool for estimating bridge preservation investment requirements. The model, which is described in **Appendix B**, includes routines for estimating investment for both bridge replacement and bridge repair and rehabilitation. For this report, the model has been revised to analyze repair and rehabilitation improvements on a bridge-by-bridge basis, and allow the prediction of additional bridge condition measures.

Appendix C presents the **Transit Economic Requirements Model (TERM)**, which is used to estimate transit investment requirements in urbanized areas. TERM includes modules which estimate the funding that will be required to replace and rehabilitate transit vehicles and other assets; to invest in new assets to accommodate future transit ridership growth; and to improve operating performance to targeted levels. Major changes reflected in this report include new data on asset inventories; revised vehicle replacement cost estimates; newly estimated deterioration curves for commuter rail vehicles; and changes to the benefit cost analysis procedures.